REMARKS

Claims 1-24 remain pending. By the foregoing amendment, independent claims 1, 11, 16, and 17 have been amended to better define the invention by pointing out that the pulsed detonation engine or identified components thereof are constructed "predominately" from a material having low thermal stability. Support for the amendments is found throughout the specification, *inter alia*, at ¶¶ 6, 7, 15, and 16. No new matter is added.

Claims 1, 2, 6, 7, 11, 12, 16-21 and 23 stand rejected under 35 U.S.C. § 102(b) as being clearly anticipated by Bussing U.S. Patent 5,513,489 ("Bussing"). Claims 3, 8, 13, 22, and 24 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over Bussing. Each of these rejections is respectfully traversed.

Bussing is cited as disclosing at column 5, lines 45-50 a pulsed detonation engine chamber that includes low thermal stability materials such as plastic. This disclosure actually refers to coating materials used in an ablative cooling method when the combustor is used in an expendable application (column 5, lines 24-31). According to Bussing, the coating material is "designed to ablate below the fuel/oxidizer auto-ignition temperature of the fuel mixture . . ." (column 5, lines 32-35).

The materials in Bussing to which the Office Action refers are not used to construct the combustor, but rather as a sacrificial coating for purposes of cooling the interior surfaces of the combustor. Independent claim 1 has been amended to distinguish more fully Bussing by pointing out that the detonation chamber is constructed predominately from a material having low thermal stability. Bussing clearly does not describe or suggest a detonation chamber having this feature. Bussing certainly does not contemplate constructing the chamber predominately from the materials identified at col. 5, lines 45-50, since Bussing discloses these materials are

ablated during operation of the engine. Dependent claims 2 and 3 distinguish Bussing for at least the same reasons applicable to independent claim 1.

Independent claim 6 is directed to a pulsed detonation engine nozzle constructed from a material having low thermal stability. The Office Action makes vague reference to "a detonation chamber and other parts of a PDE" at p. 2 of the Office Action, but does not identify any disclosure in Bussing specific to a nozzle. Figure 4B of Bussing shows a device having an ablative lining 138, which does not extend into the nozzle 137. See column 6, lines 26-34. Bussing therefore fails to describe or suggest the subject matter of independent claim 6 for at least this reason. Dependent claims 7 and 8 are allowable for at least the same reasons applicable to independent claim 6.

Independent claim 11 has been amended to point out that at least one of the detonation chamber and nozzle are constructed predominately from a material having low thermal stability. Independent claims 16 and 17 have been amended to recite that the pulsed detonation engine is constructed predominately from a material having low thermal stability. As argued above, Bussing does not disclose or suggest constructing a pulsed detonation engine chamber or nozzle predominately from a material having low thermal stability. Bussing therefore fails to disclose or suggest the invention of independent claims 11, 16, and 17 for at least this reason. Dependent claims 12 and 13 are allowable for at least the same reasons applicable to independent claim 11. Dependent claims 18-24 are allowable for at least the same reasons applicable to independent claim 17.

Claims 1, 4-7, 9-11, 14, and 15 stand rejected under 35 U.S.C. § 102(e) as being anticipated by Eidelman et al. U.S. 2003/0200753 ("Eidelman '753"). This rejection is respectfully traversed.

The Office Action asserts Eidelman '753 discloses "that the low thermal stability material is carbon-carbon and/or titanium alloys." Eidelman '753, however, does not disclose that the engine materials are of low thermal stability. Eidelman '753, in fact, states that the materials "should be selected dependent on anticipated operating conditions" and "that the engine material could be exposed to peak temperatures approaching 4000K." (¶ 29).

The Office Action apparently considers the carbon-carbon and titanium alloys described in Eidelman '753 to inherently exhibit low thermal stability as claimed in claims 1, 4-7, 9-11, 14, and 15. However, not all carbon-carbon and titanium alloys would be expected to have low thermal stability. Therefore, Eidelman '753 does not anticipate claims 1, 4-7, 9-11, 14, and 15 under well-established principles of inherency. "To establish inherency, the extrinsic evidence must make clear that the missing descriptive matter is ***necessarily present*** in the reference, and that it would be so recognized by persons of ordinary skill . . . Inherency, however, may not be established by probabilities or possibilities. The mere fact that a certain thing ***may result*** from a given set of circumstances ***is not sufficient***." *In re Robertson*, 169 F.3d 743, 745 (Fed. Cir. 1999) (emphasis added).

Accordingly, the § 102(e) rejection of claims 1, 4-7, 9-11, 14, and 15 over Eidelman '753 should be withdrawn.

CONCLUSION

In view of the foregoing, favorable reconsideration and allowance of the subject application are respectfully requested. The Examiner is invited to telephone the undersigned at the number listed below if doing so would be helpful to resolve any outstanding matters.

Respectfully submitted,

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